

**MINERALS MANAGEMENT SERVICE
ROYALTY IN KIND PILOT PROJECTS**

**SURVEY OF WYOMING CRUDE OIL MARKETS
MARCH, 1998**

The purpose of this document is to summarize information gained from a survey of Wyoming crude oil markets conducted by the Minerals Management Service (MMS) and the State of Wyoming as part of the preliminary design work prior to implementing a royalty in kind (RIK) pilot in Wyoming.

The purpose of the survey was to gain an understanding of Wyoming crude oil production and marketing so that the Wyoming pilot can be developed intelligently. We met with marketers, refiners, and producers of Wyoming crude oil, and discussed the following topics:

- Production volumes, qualities, and locations
- Pipeline transportation
- Trucked transportation
- Refineries
- Crude oil purchase
- Crude oil markets

A. Production Volumes, Qualities, and Locations

Approximately 12,700 royalty barrels/day (bbls/day) is produced from Federal leases in Wyoming, mostly from the four major geologic basins: Bighorn Basin (4,420 bbls/day or 35% of royalty volumes), Powder River Basin (4,446 bbls/day or 35%), Green River Basin (2,729 bbls/day or 22%), and the Wind River Basin (765 bbls/day or 6%). The Federal government's 12,700 bbls/day places it as the second largest "producer" of Federal crude oil in Wyoming (Attachment 1).

Production in the Bighorn Basin is almost entirely Wyoming asphaltic sour, with an average gravity of 22 degrees and 3% sulfur. Marathon is the top producer. Powder River Basin production is approximately 60% Wyoming sweet crude, with an average gravity of 40 degrees with little sulfur, and 40% Wyoming general sour, averaging 24.4 degrees gravity and 2.5% sulfur. Powder River Basin production becomes predominantly sour towards the northern portion of the Basin. Exxon and Devon are the top producers. Attachment 2 summarizes crude oil production information for the primary Wyoming basins.

B. Pipeline Transportation

The marketers and producers interviewed estimated that approximately 75% of Wyoming crude oil is transported away from the lease by pipeline, with the remaining volumes moved by truck. A well-developed pipeline infrastructure moves crude oil mostly via intrastate and interstate common carrier lines, regulated by either FERC or the State. Discounts from tariffs are rare.

The Bighorn Basin pipeline grid moves crude oil north to refineries in the Billings, MT area, and south to the Casper and Guernsey areas prior to further movement to refineries in Wyoming, Salt Lake City, Denver, and, to a minor extent, the Midwest markets. Major aggregation points in the Bighorn Basin are located at Oregon Basin and Chatham, which often aggregate production for southerly movement, and Byron and Elk Basin, which will more typically serve northerly movement of crude. However, all four aggregation points can stage production for movement in both directions. Marathon/Ashland, Amoco, Fourbear, and Conoco are the primary pipeline owners. Platte's pipe from Oregon Basin to Chatham - a primary route south for Bighorn Basin crude - was recently put out of service for repairs, resulting in over 75% of Bighorn Basin crude moving north to the Billings area.

Notably, two major pipelines move Canadian sour crude through the Bighorn Basin south to the Casper area:

- Express Pipeline: This pipe currently moves approximately 110,000 bbls/day (although its capacity is some 270,000 bbls/day) from Alberta to Casper with no access for movement of local crude.
- Amoco/Conoco Pipeline: This line moves some 100,000 bbls/day, including some local crude south to the Casper area. Amoco posts sweet tariffs and Conoco posts sour tariffs. [NOTE: One marketer stated that Amoco has filed with FERC to cancel tariffs in the Bighorn Basin, an action that could eliminate local access for some crudes thus making this line more of a long haul, non-common carrier route; reportedly, protests have been filed and FERC will adjudicate]

Powder River Basin movement of crude oil is to the south mostly to the Guernsey/Fort Laramie areas for further movement to Denver, Salt Lake City, and Midwest markets. Most pipelines move both sweet and sour crude oil, in separate batches. Major aggregation points are located at Reno, Osage, and Donkey Creek. Belle Fourche, TTTI, Butte, and Amoco are the major gatherers. The Amoco, Butte, and Belle Fourche systems are the primary pipeline trunklines leading to refineries at Newcastle, Casper, Rawlins, Cheyenne, Denver, and Salt Lake City. Guernsey and Fort Laramie are the market centers.

Crude oil movement to Midwest markets in Kansas and Illinois occurs through the Platte Pipeline which runs from Casper to Wood River, Illinois. The Platte Pipeline has a capacity of 120,000 bbls/day, and is typically full with mostly Canadian crude oil. In fact, early 1998 has seen over- nominations on the Platte Pipeline, with resulting prorations of 25% (i.e., only 75% of nominated volumes are being transported). According to industry sources, the Platte Pipeline is Canadian-owned, and some charge that preferential treatment may be given to movement of Canadian crudes, which if true puts Wyoming crude oil at a distinct disadvantage in movement to broader (less regional) markets.

C. Trucked transportation

In both primary basins in Wyoming, trucking of crude oil is an important component to the transportation network. Generally, crude oil trucking occurs from marginal producing leases to pipeline injection points (also known as truck depots) over distances generally less than 100 miles. More prolific producing leases are generally connected to pipelines. TTTI, Scurlock-Permian Limited Liability, EOTT, and 88 Oil all engage in trucking local crude oils.

D. Refineries

The Rocky Mountain region has a refining capacity of some 500,000 bbls/day, enough capacity to refine current production in the Rockies. Almost all Rocky Mountain crude oil is refined in the area, with only a minor amount transported to Midwest markets via the Platte Pipeline. Major refineries are:

- Salt Lake City: Five refineries process sweet crude oil (though some Canadian sour is used for feedstock): Amoco, Flying J/Big West, Chevron, Phillips, and Cryslen
- Montana: Four refineries process mostly sour crudes: Exxon (Billings), Conoco (Billings), Cenex (Laurel/Billings), and Montana Refining (Great Falls). Montana is increasingly refining Canadian crude.
- Wyoming: Four refineries
 1. Sinclair (Rawlins): 50% sour/sweet
 2. Frontier (Cheyenne): Sour
 3. Wyoming Refining (Newcastle): Sweet
 4. Little America (Casper): Sweet
- Denver: Two refineries
 1. Conoco: 60% Sour; 40% sweet
 2. Ultramar/Diamond Shamrock: Sweet

The Rocky Mountain refineries sometimes purchase crude oil feedstock from producers at the lease, however, purchases at the market centers and major aggregation points are much more common. For example, one refiner purchases only 5,000 bbls/day at the lease and approximately 25,000 bbls/day via several long term contracts at market centers.

E. Crude Oil Purchase

Major Purchasers. The three major crude oil purchasers of crude oil in Wyoming are 88 Oil, Texaco Trading and Transportation, Inc. (TTTI), and EOTT Operating and Limited Partnership, buying some 60,000, 50,000, and 25,000 bbls/day, respectively. The first two of these midstream companies are affiliates of major producers (True Oil and Texaco Exploration and Production, Inc, respectively), both in the top 10 of crude oil producers in Wyoming. Notably, each of these three firms either owns and operates Wyoming pipeline systems or trucking

operations. The purchasers bring added value to crude oil by taking deliveries of lease production, nominating and moving the production downstream, aggregating, and offering such volumes for sale or exchange.

Most of the region's purchasers (but not all) stated that they would be interested in purchasing royalty barrels or acting as a marketing agent. However, all cautioned that downstream margins are very thin, and that MMS should not expect appreciable participation in value enhancements created by application of trading knowledge and the assumption of risk by marketing agents.

Major integrated oil companies purchase significant quantities of crude oil for subsequent sale or exchange in combination with their equity production, or for feedstock for their own refineries. Amoco, Chevron, Exxon, Conoco, and Marathon are examples of Wyoming oil companies in this category.

Valuation Basis. Producers, purchasers, and refiners of Wyoming crude state that they primarily use posted prices in the Wyoming area as a basis or reference point when tendering, bidding, or buying crude oil. Sales are usually expressed in terms of premia above postings. Six postings appear to be the ones most commonly used: Marathon, Scurlock Permian, EOTT, TTTI, Conoco, and Koch. Marathon and Scurlock-Permian have reportedly merged, and MMS has heard Marathon's postings will be phased out. Sales and exchanges of Wyoming sweet may also be made in relation to the spot price of West Texas Intermediate (WTI) at Cushing, Oklahoma, and the NYMEX futures price of WTI at Cushing. However, producers, purchasers, and refiners all told MMS that there is less of a relationship between either Wyoming asphaltic sour or Wyoming general sour and the Midcontinent spot/futures markets, and thus the WTI Cushing/NYMEX prices are not often used.

Some producers are now asking for bids referencing postings but also request bidders to also use the Platt's P+ market differential to assure that bids are more "market sensitive".

Aggregation. The major producers of Wyoming crude oil dominate production: the top eight producers are responsible for production of 93% of Wyoming crude oil from Federal leases. To understand if aggregation of crude oil increases prices received, MMS examined the relationship between Wyoming crude oil royalty prices and volumes.

Attachment 3 shows that for a major Rocky Mountain producing basin in a recent 6-month period, the largest producer received the median price, and that both the largest and smallest producers were among those commanding the highest prices and the lowest prices. The same dynamic occurs in every onshore State. We conclude that there is no relationship between prices received and volumes sold; that is, aggregation does not appear to enhance unit prices.

MMS has no data and could obtain no data to examine under what conditions lease sales or downstream sales lead to higher prices net of costs.

F. Crude Oil Markets

The Rocky Mountain crude oil market is a regional market currently characterized by abundant supply with limited ability to physically move volumes to other markets. Crude oil supply for the regional refining centers in Wyoming, Billings, Salt Lake City, and Denver comes not only from local producing fields in Wyoming, Montana, Colorado, Utah, North Dakota, and Colorado, but also from prolific sources in Alberta. Some 210,000 bbls/day of Canadian sour crude currently moves to the Casper area, with only about 100,000 bbls/day exiting the region via the Platte Pipeline. Perhaps more importantly, the total capacity to move Canadian crude into the Rocky Mountain region is a prodigious 370,000 bbls/day, a prospect that increases the appearance, and thus reality, of a buyer's market for crude oil. All of the marketers told MMS that current margins are quite tight.

The influx of Canadian sour crude has especially weakened the regional market for Wyoming general sour and Wyoming asphaltic sour, for obvious reasons. The market for Wyoming asphaltic sour has been particularly hard hit this winter due to the highly seasonal nature of the asphaltic crude market, combined with the transportation disruptions in the Bighorn Basin (described above) that act to constrain movement of local crude while Canadian crude continues to move. Refiners are in the dominant position, and prices in the \$6 to \$7 dollar/bbl range are currently occurring. MMS has been told that prices for Wyoming sweet have also been negatively affected by the influx of Canadian sour crudes because refiners of sweet crudes in the Salt Lake City area are now increasingly using these low-priced sour crudes as a feedstock.

The limited physical movement of crude oil out of the region does not by itself constrain the ability of marketers and producers to trade or exchange Rocky Mountain crudes at market centers like Cushing, Oklahoma. This type of trading is fairly common in the Wyoming sweet market, however, the weakness in Rocky Mountain crude prices greatly limits the value of crude for exchange. MMS was told that trading or exchanging Wyoming sour crudes in the Midcontinent market centers is not particularly common.

G. Conclusions

The information gathered on Wyoming crude oil markets during the market survey phase of the Wyoming Pilot leads us to make the following conclusions:

1. The region is long on supply relative to demand, thus creating a buyer's market.
2. The capacity and potential exist for additional influx of Canadian crude into the Rocky Mountain crude oil markets .
3. There is little physical movement of Rocky Mountain production out of the region. Movement within and downstream of the Bighorn Basin is currently constrained.
4. There is an established trading relationship - and thus a valuation relationship -

between the Rocky Mountain and Midcontinent markets for sweet crudes.

5. There is a more tenuous relationship between Rocky Mountain and Midcontinent markets for sour crudes, although some trading occurs.
6. Value is predominantly referenced in relation to local posted prices, although Cushing postings and spot prices may often be used for sweet crudes.
7. Due to significant market weakness, margins to be gained in the midstream market for Rocky Mountain crude oil are very slim.

MMS Royalty Marketing Pilot - Wyoming
 Payors sorted by Royalty Quantity
 Sales Month: January - June 1997

Payor Name	Sales Quantity	Royalty Quantity	Jan-Jun 1997 Royalty bbls/day	Cumul bbls/day	Pct of Volume	Cumul Pct	MMS Royalty Vol/Payor Equity Vol
Marathon Oil Co. Total	3,206,541	329,016	1,817.8	1,817.8	14.4%	14.4%	2,877,525
MMS Royalty Volume							2,282,236
Amoco Prod. Total	2,496,035	214,659	1,186.0	3,003.7	9.4%	23.8%	2,281,376
Texaco Inc. Total	2,025,355	192,719	1,064.7	4,068.5	8.4%	32.3%	1,832,636
Eighty-Eight Oil Total	1,445,572	162,758	899.2	4,967.7	7.1%	39.4%	1,282,814
Chevron USA Total	1,138,370	161,060	889.8	5,857.5	7.1%	46.5%	977,311
Exxon Co. USA Total	940,370	118,587	655.2	6,512.7	5.2%	51.7%	821,783
Citation O&G Total	1,065,164	117,411	648.7	7,161.4	5.1%	56.8%	947,753
Bass Enterprises Total	760,169	89,084	492.2	7,653.6	3.9%	60.7%	671,085
Enron O&G Total	833,983	82,124	453.7	8,107.3	3.6%	64.3%	751,860
Devon Energy Corp. Total	725,306	73,500	406.1	8,513.4	3.2%	67.5%	651,806
Snyder Oil Co. Total	649,119	67,472	372.8	8,886.1	3.0%	70.5%	581,647
Hunt Oil Co. Total	510,268	58,286	322.0	9,208.2	2.6%	73.0%	451,982
Merit Energy Total	472,921	53,079	293.3	9,501.4	2.3%	75.4%	419,842
Conoco Inc. Total	365,915	44,383	245.2	9,746.6	1.9%	77.3%	321,533
Westport O&G Total	330,652	28,849	159.4	9,906.0	1.3%	78.6%	301,804
Scurlock Permian Total	225,073	27,885	154.1	10,060.1	1.2%	79.8%	197,189
Wexpro Co. Total	215,309	26,914	148.7	10,208.7	1.2%	81.0%	188,395
Union Pacific Res. Co. Total	184,840	25,261	139.6	10,348.3	1.1%	82.1%	159,579
JN Exploration Total	251,026	24,750	136.7	10,485.1	1.1%	83.2%	226,276
Cabot O&G Corp. Total	166,057	20,933	115.6	10,600.7	0.9%	84.1%	145,124
Big West O&G Total	166,440	19,988	110.4	10,711.1	0.9%	84.9%	146,452
Mercury Exploration Total	182,406	16,840	93.0	10,804.2	0.7%	85.7%	165,566
Equitable Res. Total	149,884	15,579	86.1	10,890.3	0.7%	86.4%	134,304
Costilla Petro. Total	119,871	14,900	82.3	10,972.6	0.7%	87.0%	104,971
KCS Mountain Res Total	122,175	13,897	76.8	11,049.4	0.6%	87.6%	108,278
McMurry Oil Total	97,473	12,185	67.3	11,116.7	0.5%	88.2%	85,288
Samedan Oil Corp. Total	96,171	12,021	66.4	11,183.1	0.5%	88.7%	84,150
Phoenix Prod. Co. Total	90,316	10,309	57.0	11,240.0	0.5%	89.1%	80,007
Frontier Oil & Ref Total	82,296	9,704	53.6	11,293.7	0.4%	89.6%	72,591
Celsius Energy Total	77,147	9,550	52.8	11,346.4	0.4%	90.0%	67,597
Vessels O&G Total	35,949	9,508	52.5	11,399.0	0.4%	90.4%	26,442
Burlington Resources Total	74,431	9,196	50.8	11,449.8	0.4%	90.8%	65,235
Abraxas Petro. Total	69,858	8,732	48.2	11,498.0	0.4%	91.2%	61,126
Phillips Petroleum Total	65,164	8,428	46.6	11,544.6	0.4%	91.6%	56,736
Swift Energy Co. Total	63,706	7,963	44.0	11,588.6	0.3%	91.9%	55,743
Coastal O&G Total	63,582	7,911	43.7	11,632.3	0.3%	92.3%	55,671
Eland Energy Inc. Total	61,750	7,740	42.8	11,675.0	0.3%	92.6%	54,011
Wold Oil Properties Total	92,680	7,664	42.3	11,717.4	0.3%	92.9%	85,017
Barrett Res. Total	48,953	7,154	39.5	11,756.9	0.3%	93.2%	41,799
GLG Energy Total	53,631	6,704	37.0	11,793.9	0.3%	93.5%	46,927
Big West Oil Total	52,276	6,535	36.1	11,830.0	0.3%	93.8%	45,742
Medallion Exploration Total	48,094	6,415	35.4	11,865.5	0.3%	94.1%	41,679
UMC Petroleum Total	49,126	6,111	33.8	11,899.2	0.3%	94.4%	43,015
Yates Petroleum Total	47,306	5,354	29.6	11,928.8	0.2%	94.6%	41,952
Nielson & Assoc. Total	39,190	4,899	27.1	11,955.9	0.2%	94.8%	34,291
Ensign O&G Total	75,629	4,694	25.9	11,981.8	0.2%	95.0%	70,935
Apache Corp. Total	33,158	4,145	22.9	12,004.7	0.2%	95.2%	29,014
HS Resources Total	32,811	4,101	22.7	12,027.4	0.2%	95.4%	28,710
Lantern Petroleum Total	34,304	3,801	21.0	12,048.4	0.2%	95.6%	30,503
Presidio Energy Total	29,305	3,663	20.2	12,068.6	0.2%	95.7%	25,641
Mobil E&P Total	29,458	3,656	20.2	12,088.8	0.2%	95.9%	25,802
Petrogulf Corp. Total	27,618	3,460	19.1	12,107.9	0.2%	96.0%	24,157
Berco Res. Total	26,184	3,273	18.1	12,126.0	0.1%	96.2%	22,911
Plains Petro. Optg Total	24,806	3,154	17.4	12,143.4	0.1%	96.3%	21,653
Burr O&G Total	24,936	3,117	17.2	12,160.7	0.1%	96.4%	21,819
Texon L.P. Total	26,151	3,117	17.2	12,177.9	0.1%	96.6%	23,035
Koch Industries Total	29,855	3,105	17.2	12,195.0	0.1%	96.7%	26,751
Vintage Petroleum Total	23,893	2,987	16.5	12,211.5	0.1%	96.8%	20,906

Attachment 1

MMS Royalty Marketing Pilot - Wyoming
 Payors sorted by Royalty Quantity
 Sales Month: January - June 1997

Payor Name	Sales Quantity	Royalty Quantity	Jan-Jun 1997 Royalty bbls/day	Cumul bbls/day	Pct of Volume	Cumul Pct	MMS Royalty Vol/Payor Equity Vol
Tongue River Trading Total	31,572	2,829	15.6	12,227.2	0.1%	97.0%	28,743
BTA Oil Prod. Total	22,224	2,778	15.3	12,242.5	0.1%	97.1%	19,446
Flying J Petro. Total	22,034	2,754	15.2	12,257.7	0.1%	97.2%	19,280
Western Prod. Co. Total	79,449	2,752	15.2	12,272.9	0.1%	97.3%	76,697
Kaiser-Francis Total	22,707	2,707	15.0	12,287.9	0.1%	97.5%	19,999
DNR O&G Total	41,641	2,644	14.6	12,302.5	0.1%	97.6%	38,997
Forcenergy Inc. Total	23,817	2,545	14.1	12,316.6	0.1%	97.7%	21,272
Enserch Expl. Total	19,303	2,413	13.3	12,329.9	0.1%	97.8%	16,890
NGC Resources Total	18,729	2,341	12.9	12,342.8	0.1%	97.9%	16,388
Panterra Petroleum Total	17,606	2,202	12.2	12,355.0	0.1%	98.0%	15,404
Cross Timbers Inc. Total	16,885	2,111	11.7	12,366.7	0.1%	98.1%	14,775
Samson Res. Co. Total	16,573	2,072	11.4	12,378.1	0.1%	98.2%	14,501
Luff Exploration Total	16,264	2,033	11.2	12,389.3	0.1%	98.3%	14,231
Bailard & Assoc. Total	15,680	1,960	10.8	12,400.2	0.1%	98.3%	13,720
Whiting Petro. Total	13,547	1,693	9.4	12,409.5	0.1%	98.4%	11,854
Halwood Petroleum Total	12,215	1,527	8.4	12,418.0	0.1%	98.5%	10,688
Beren Corp. Total	13,227	1,507	8.3	12,426.3	0.1%	98.6%	11,720
Hanson Op.Co. Total	13,732	1,493	8.2	12,434.5	0.1%	98.6%	12,239
CENEX Total	14,716	1,343	7.4	12,441.9	0.1%	98.7%	13,372
Medallion Petroleum Total	10,671	1,333	7.4	12,449.3	0.1%	98.7%	9,337
Slawson Expl. Total	10,643	1,330	7.4	12,456.7	0.1%	98.8%	9,313
Richardson Optg Total	10,626	1,328	7.3	12,464.0	0.1%	98.8%	9,298
Citgo Petroleum Total	10,557	1,320	7.3	12,471.3	0.1%	98.9%	9,237
JP Oil Co. Total	19,002	1,249	6.9	12,478.2	0.1%	99.0%	17,753
Coastal Corp. Total	9,711	1,214	6.7	12,484.9	0.1%	99.0%	8,497
Anschutz Corp. Total	9,333	1,167	6.4	12,491.3	0.1%	99.1%	8,166
Sinclair Oil Co. Total	11,374	980	5.4	12,496.8	0.0%	99.1%	10,394
Belco Energy Total	7,711	964	5.3	12,502.1	0.0%	99.2%	6,747
OXY USA Total	7,341	918	5.1	12,507.2	0.0%	99.2%	6,424
Headington Oil Total	7,367	896	4.9	12,512.1	0.0%	99.2%	6,471
Sunshine Valley Petro. Total	23,968	825	4.6	12,516.7	0.0%	99.3%	23,143
Neward Corp. Total	15,620	812	4.5	12,521.1	0.0%	99.3%	14,808
Crawley Petroleum Total	6,151	771	4.3	12,525.4	0.0%	99.3%	5,380
Central Res. Inc. Total	7,758	732	4.0	12,529.4	0.0%	99.4%	7,026
Energy Equity Co. Total	5,802	724	4.0	12,533.4	0.0%	99.4%	5,077
Anderson Oil Corp. Total	5,911	689	3.8	12,537.3	0.0%	99.4%	5,222
Ataska Res. Total	14,827	681	3.8	12,541.0	0.0%	99.5%	14,146
First Mineral Prod. Total	6,585	665	3.7	12,544.7	0.0%	99.5%	5,920
Murphy Oil Total	5,937	662	3.7	12,548.3	0.0%	99.5%	5,275
Highland Energy Total	9,622	644	3.6	12,551.9	0.0%	99.5%	8,978
Chemily Mgmt Total	26,262	627	3.5	12,555.4	0.0%	99.6%	25,635
3-G Inc. Total	4,571	571	3.2	12,558.5	0.0%	99.6%	3,999
Petroleum Inc. Total	4,312	539	3.0	12,561.5	0.0%	99.6%	3,773
North Finn Total	10,435	538	3.0	12,564.5	0.0%	99.6%	9,897
Slawson Exploration Total	3,949	494	2.7	12,567.2	0.0%	99.7%	3,456
D'Agnostino, Bruno Total	7,106	490	2.7	12,569.9	0.0%	99.7%	6,616
Intoil Inc. Total	3,324	415	2.3	12,572.2	0.0%	99.7%	2,909
Basin Expl. Total	5,332	380	2.1	12,574.3	0.0%	99.7%	4,952
Southwestern Energy Total	2,778	347	1.9	12,576.2	0.0%	99.7%	2,431
Independent Prod Co Total	4,543	342	1.9	12,578.1	0.0%	99.8%	4,201
DCD Inc. Total	4,738	331	1.8	12,579.9	0.0%	99.8%	4,407
Arnell Oil Co. Total	10,993	319	1.8	12,581.7	0.0%	99.8%	10,674
Great Western Drig Total	4,361	310	1.7	12,583.4	0.0%	99.8%	4,051
Merrion O&G Total	2,322	290	1.6	12,585.0	0.0%	99.8%	2,032
Hatcreek Prtnshp Total	2,296	287	1.6	12,586.6	0.0%	99.8%	2,009
Equity Oil Co. Total	2,552	275	1.5	12,588.1	0.0%	99.8%	2,277
Forest Oil Total	2,080	260	1.4	12,589.6	0.0%	99.8%	1,820
Townsend Co. Total	13,586	247	1.4	12,590.9	0.0%	99.9%	13,339
Cody Energy Total	1,928	241	1.3	12,592.3	0.0%	99.9%	1,687

Attachment 1

MMS Royalty Marketing Pilot - Wyoming
 Payors sorted by Royalty Quantity
 Sales Month: January - June 1997

Payor Name	Sales Quantity	Royalty Quantity	Jan-Jun 1997 Royalty bbls/day	Cumul bbls/day	Pct of Volume	Cumul Pct	MMS Royalty Vol/Payor Equity Vol
Universal Res. Total	3,171	235	1.3	12,593.6	0.0%	99.9%	2,936
Cook, L.D. Total	1,447	181	1.0	12,594.6	0.0%	99.9%	1,266
McRae & Henry Ltd Total	2,944	176	1.0	12,595.5	0.0%	99.9%	2,768
German Op. Co. Total	1,294	162	0.9	12,596.4	0.0%	99.9%	1,132
Prima O&G Total	1,293	162	0.9	12,597.3	0.0%	99.9%	1,131
XOIL Inc. Total	1,138	142	0.8	12,598.1	0.0%	99.9%	996
Delta Petroleum Total	676	135	0.7	12,598.8	0.0%	99.9%	540
Continental Optg Total	3,057	133	0.7	12,599.6	0.0%	99.9%	2,925
Havoco Total	974	122	0.7	12,600.3	0.0%	99.9%	852
Prospective Invstmt Total	1,085	112	0.6	12,600.9	0.0%	99.9%	973
Bissell Oil Total	1,913	103	0.6	12,601.4	0.0%	99.9%	1,810
Natural Gas Proc Co Total	763	95	0.5	12,602.0	0.0%	99.9%	668
Underwood, Carl Total	3,240	92	0.5	12,602.5	0.0%	99.9%	3,148
Great Northern Gas Total	1,413	80	0.4	12,602.9	0.0%	100.0%	1,333
Coronado Oil Co. Total	2,692	80	0.4	12,603.4	0.0%	100.0%	2,612
D.C. Dudley Total	636	80	0.4	12,603.8	0.0%	100.0%	557
Thorofare Res. Total	945	77	0.4	12,604.2	0.0%	100.0%	868
Hillcorp Energy Total	1,084	75	0.4	12,604.6	0.0%	100.0%	1,010
Dahill, Murray Total	3,645	73	0.4	12,605.0	0.0%	100.0%	3,573
Benson-Montin-Greer Total	1,110	68	0.4	12,605.4	0.0%	100.0%	1,042
P&M Petroleum Total	1,487	67	0.4	12,605.8	0.0%	100.0%	1,420
Shannon III Total	461	58	0.3	12,606.1	0.0%	100.0%	404
Hallador Petro. Total	438	50	0.3	12,606.4	0.0%	100.0%	388
Herbaly Petro. Total	392	49	0.3	12,606.6	0.0%	100.0%	343
ROCKRVR Total	980	44	0.2	12,606.9	0.0%	100.0%	935
Brown, Tom Inc. Total	343	43	0.2	12,607.1	0.0%	100.0%	300
H & R Oil Total	1,025	42	0.2	12,607.4	0.0%	100.0%	984
R & C Trucks Total	608	37	0.2	12,607.6	0.0%	100.0%	571
Doheny, Patrick Total	270	34	0.2	12,607.8	0.0%	100.0%	236
Wagner & Brown Ltd Total	230	29	0.2	12,607.9	0.0%	100.0%	201
Bristol Res. Total	228	28	0.2	12,608.1	0.0%	100.0%	199
Winkler, L.W. Total	1,064	27	0.2	12,608.2	0.0%	100.0%	1,037
Labarge Minerals Total	172	22	0.1	12,608.3	0.0%	100.0%	151
Beartooth O&G Total	169	21	0.1	12,608.5	0.0%	100.0%	148
Quest Energies Group Total	261	16	0.1	12,608.5	0.0%	100.0%	245
Boggy Creek Total	339	15	0.1	12,608.6	0.0%	100.0%	325
Ant Hills Total	692	15	0.1	12,608.7	0.0%	100.0%	677
Vortex Petroleum Total	116	15	0.1	12,608.8	0.0%	100.0%	102
Marshall & Winston Inc. Total	81	10	0.1	12,608.8	0.0%	100.0%	71
Diverse G.P. Total	80	10	0.1	12,608.9	0.0%	100.0%	70
Duncan Oil Inc. Total	78	9	0.1	12,608.9	0.0%	100.0%	69
Manx Oil Corp Total	339	7	0.0	12,609.0	0.0%	100.0%	332
Termo Co. Total	236	5	0.0	12,609.0	0.0%	100.0%	231
T.H. McElvain O&G Total	18	2	0.0	12,609.0	0.0%	100.0%	16
Guenthart, Wm Total	165	2	0.0	12,609.0	0.0%	100.0%	163
Western Gas Proc. Total	3	0	0.0	12,609.0	0.0%	100.0%	3
Mountain Fuel Supply Total	-	-	-	12,609.0	0.0%	100.0%	-
Shamazoe LTD Total	-	-	-	12,609.0	0.0%	100.0%	-
Teapot Oil & Ref. Total	955	-	-	12,609.0	0.0%	100.0%	955
Grand Total	<u>21,287,687</u>	<u>2,282,236</u>	<u>12,609</u>				<u>21,287,687</u>

MMS Royalty Marketing Pilot
Wyoming: Sales Months January - June 1997

Basin	County Name	Leases Reporting PC 01 - oil						Leases Reporting PC 02 - condensate					Total Leases Reporting PC 01 & 02				
		Total Leases	No. of Leases	Royalty Quantity	Royalty Value	Royalty bbls/day	Pct of Volume	No. of Leases	Royalty Quantity	Royalty Value	Royalty bbls/day	Pct of Volume	No. of Leases	Royalty Quantity	Royalty Value	Royalty bbls/day	Pct of Volume
Big Horn	Park	138	136	403,577	\$ 6,502,036	2,230	19.6%	15	204	\$ 3,651	1	0.1%	151	403,781	\$ 6,505,687	2,231	17.6%
Big Horn	Hot Springs	95	95	178,224	\$ 2,823,802	985	8.7%	2	16	\$ 231	0	0.0%	97	178,240	\$ 2,824,033	985	7.7%
Big Horn	Washakie	161	156	126,630	\$ 2,147,999	700	6.2%	6	685	\$ 13,014	4	0.3%	162	127,315	\$ 2,161,013	703	5.5%
Big Horn	Big Horn	109	80	88,343	\$ 1,450,061	488	4.3%	38	2,416	\$ 46,185	13	1.0%	118	90,759	\$ 1,496,246	501	3.9%
subtotal		503	467	796,774	\$ 12,923,898	4,402	38.7%	61	3,321	\$ 63,081	18	1.4%	528	800,095	\$ 12,986,979	4,420	34.8%
Powder River	Campbell	1,023	1,007	472,238	\$ 8,693,881	2,609	22.9%	35	1,822	\$ 36,447	10	0.8%	1,042	474,060	\$ 8,730,328	2,619	20.6%
Powder River	Converse	540	531	136,981	\$ 2,716,167	757	6.7%	15	814	\$ 16,001	4	0.3%	546	137,795	\$ 2,732,168	761	6.0%
Powder River	Crook	112	112	96,384	\$ 1,326,513	533	4.7%	1	609	\$ 12,350	3	0.3%	113	96,993	\$ 1,338,863	536	4.2%
Powder River	Johnson	157	157	69,244	\$ 1,242,502	383	3.4%	-	-	\$ -	-	-	157	69,244	\$ 1,242,502	383	3.0%
Powder River	Niobrara	74	74	15,416	\$ 285,975	85	0.7%	-	-	\$ -	-	-	74	15,416	\$ 285,975	85	0.7%
Powder River	Weston	391	391	10,354	\$ 211,067	57	0.5%	-	-	\$ -	-	-	391	10,354	\$ 211,067	57	0.5%
Powder River	Sheridan	13	13	855	\$ 16,538	5	0.0%	-	-	\$ -	-	-	13	855	\$ 16,538	5	0.0%
subtotal		2,310	2,285	801,472	\$ 14,492,643	4,428	38.9%	51	3,245	\$ 64,798	18	1.3%	2,336	804,717	\$ 14,557,441	4,446	35.0%
Green River	Uinta	118	39	132,281	\$ 2,958,363	731	6.4%	89	50,008	\$ 693,149	276	20.7%	128	182,289	\$ 3,651,512	1,007	7.9%
Green River	Sweetwater	447	119	120,797	\$ 2,347,984	667	5.9%	362	57,164	\$ 1,219,919	316	23.7%	481	177,961	\$ 3,567,903	983	7.7%
Green River	Sublette	279	110	34,400	\$ 751,575	190	1.7%	248	40,588	\$ 890,013	224	16.8%	358	74,988	\$ 1,641,588	414	3.3%
Green River	Lincoln	252	22	7,623	\$ 169,760	42	0.4%	249	51,027	\$ 885,559	282	21.1%	271	58,650	\$ 1,055,319	324	2.5%
subtotal		1,096	290	295,101	\$ 6,227,682.00	1,630	14.3%	948	198,787	\$ 3,688,640.00	1,098	82.3%	1,238	493,888	\$ 9,916,322	2,729	21.5%
Wind River	Natrona	239	219	106,790	\$ 2,025,266	590	5.2%	21	8,807	\$ 175,359	49	3.6%	240	115,597	\$ 2,200,625	639	5.0%
Wind River	Fremont	78	52	17,681	\$ 334,565	98	0.9%	41	5,200	\$ 101,108	29	2.2%	93	22,881	\$ 435,673	126	1.0%
subtotal		317	271	124,471	\$ 2,359,831	688	6.0%	62	14,007	\$ 276,467	77	5.8%	333	138,478	\$ 2,636,298	765	6.0%
Hanna	Carbon	141	43	37,616	\$ 641,323	208	1.8%	101	22,308	\$ 470,135	123	9.2%	144	59,924	\$ 1,111,458	331	2.6%
Laramie	Albany	5	5	2,140	\$ 36,029	12	0.1%	-	-	\$ -	-	-	5	2,140	\$ 36,029	12	0.1%
Denver-Julesburg	Laramie	6	6	1,289	\$ 26,286	7	0.1%	-	-	\$ -	-	-	6	1,289	\$ 26,286	7	0.1%
Grand Total		4,378	3,367	2,058,863	\$ 36,707,692	11,375	100%	1,223	241,668	\$ 4,563,121	1,335	100%	4,590	2,300,531	\$ 41,270,813	12,710	100%

Schedule sorted by Royalty Quantity

Payor Volume Rank	Royalty Quantity	Royalty Value	Unit Value	Pct of Vol
Payor 1	296,184.08	\$4,747,229.53	\$16.03	39.0%
Payor 2	88,669.89	\$1,523,880.45	\$17.19	11.7%
Payor 3	85,635.76	\$1,388,561.48	\$16.21	11.3%
Payor 4	80,310.87	\$1,228,819.93	\$15.30	10.6%
Payor 5	48,800.79	\$738,522.01	\$15.13	6.4%
Payor 6	47,971.00	\$766,916.13	\$15.99	6.3%
Payor 7	34,879.04	\$543,121.62	\$15.57	4.6%
Payor 8	22,176.17	\$409,183.99	\$18.45	2.9%
Payor 9	13,514.57	\$234,305.21	\$17.34	1.8%
Payor 10	8,410.39	\$143,954.73	\$17.12	1.1%
Payor 11	6,484.53	\$94,472.70	\$14.57	0.9%
Payor 12	3,867.87	\$61,310.17	\$15.85	0.5%
Payor 13	3,785.48	\$59,606.27	\$15.75	0.5%
Payor 14	2,409.24	\$39,262.58	\$16.30	0.3%
Payor 15	2,301.34	\$38,528.41	\$16.74	0.3%
Payor 16	1,985.24	\$33,225.87	\$16.74	0.3%
Payor 17	1,761.42	\$28,520.74	\$16.19	0.2%
Payor 18	1,693.37	\$30,922.35	\$18.26	0.2%
Payor 19	1,493.10	\$24,124.72	\$16.16	0.2%
Payor 20	1,178.16	\$16,654.96	\$14.14	0.2%
Payor 21	1,138.95	\$17,989.66	\$15.79	0.2%
Payor 22	721.64	\$11,687.43	\$16.20	0.1%
Payor 23	693.30	\$10,945.27	\$15.79	0.1%
Payor 24	665.12	\$8,754.24	\$13.16	0.1%
Payor 25	584.54	\$10,399.50	\$17.79	0.1%
Payor 26	391.22	\$6,313.72	\$16.14	0.1%
Payor 27	343.02	\$5,826.29	\$16.99	0.0%
Payor 28	220.56	\$3,028.63	\$13.73	0.0%
Payor 29	177.49	\$2,172.97	\$12.24	0.0%
Payor 30	79.25	\$797.79	\$10.07	0.0%
Payor 31	76.64	\$1,229.03	\$16.04	0.0%
Payor 32	51.68	\$846.98	\$16.39	0.0%
Payor 33	51.14	\$795.74	\$15.56	0.0%
Payor 34	37.09	\$520.69	\$14.04	0.0%
Payor 35	23.88	\$391.94	\$16.41	0.0%
Payor 36	2.31	\$31.47	\$13.62	0.0%
Grand Total	758,740.20	\$12,232,288.52	\$16.12	

Schedule sorted by Unit Price

Payor Volume Rank	Royalty Quantity	Royalty Value	Unit Value	Pct of Vol
Payor 8	22,176.17	\$409,183.99	\$18.45	2.9%
Payor 18	1,693.37	\$30,922.35	\$18.26	0.2%
Payor 25	584.54	\$10,399.50	\$17.79	0.1%
Payor 9	13,514.57	\$234,305.21	\$17.34	1.8%
Payor 2	88,669.89	\$1,523,880.45	\$17.19	11.7%
Payor 10	8,410.39	\$143,954.73	\$17.12	1.1%
Payor 27	343.02	\$5,826.29	\$16.99	0.0%
Payor 15	2,301.34	\$38,528.41	\$16.74	0.3%
Payor 16	1,985.24	\$33,225.87	\$16.74	0.3%
Payor 35	23.88	\$391.94	\$16.41	0.0%
Payor 32	51.68	\$846.98	\$16.39	0.0%
Payor 14	2,409.24	\$39,262.58	\$16.30	0.3%
Payor 3	85,635.76	\$1,388,561.48	\$16.21	11.3%
Payor 22	721.64	\$11,687.43	\$16.20	0.1%
Payor 17	1,761.42	\$28,520.74	\$16.19	0.2%
Payor 19	1,493.10	\$24,124.72	\$16.16	0.2%
Payor 26	391.22	\$6,313.72	\$16.14	0.1%
Payor 31	76.64	\$1,229.03	\$16.04	0.0%
Payor 1	296,184.08	\$4,747,229.53	\$16.03	39.0%
Payor 6	47,971.00	\$766,916.13	\$15.99	6.3%
Payor 12	3,867.87	\$61,310.17	\$15.85	0.5%
Payor 21	1,138.95	\$17,989.66	\$15.79	0.2%
Payor 23	693.30	\$10,945.27	\$15.79	0.1%
Payor 13	3,785.48	\$59,606.27	\$15.75	0.5%
Payor 7	34,879.04	\$543,121.62	\$15.57	4.6%
Payor 33	51.14	\$795.74	\$15.56	0.0%
Payor 4	80,310.87	\$1,228,819.93	\$15.30	10.6%
Payor 5	48,800.79	\$738,522.01	\$15.13	6.4%
Payor 11	6,484.53	\$94,472.70	\$14.57	0.9%
Payor 20	1,178.16	\$16,654.96	\$14.14	0.2%
Payor 34	37.09	\$520.69	\$14.04	0.0%
Payor 28	220.56	\$3,028.63	\$13.73	0.0%
Payor 36	2.31	\$31.47	\$13.62	0.0%
Payor 24	665.12	\$8,754.24	\$13.16	0.1%
Payor 29	177.49	\$2,172.97	\$12.24	0.0%
Payor 30	79.25	\$797.79	\$10.07	0.0%
Grand Total	758,740.20	\$12,232,288.52	\$16.12	